Zero Retries issue 0174 2024-10-18

Zero Retries is an independent newsletter promoting technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Radios are computers - with antennas! Now in its fourth year of publication, with ~~2100+~~ 2200+ email subscribers.

About Zero Retries

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus

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Web version of this issue - https://www.zeroretries.org/p/zero-retries-0174

Request To Send

Commentary by Editor Steve Stroh N8GNJ

2200 Zero Retries Email Subscribers!

From various mentions of Zero Retries in the past few weeks, the email subscriber count ticked up again to another "century" milestone, to ***2200***. I'm gratified to have so many subscribers. "2200" is actually a fuzzy metric as it doesn't include readers that follow Zero Retries via RSS, or following Zero Retries (me) on Mastodon or Bluesky, the two social media platforms that I currently post notifications of new issues of Zero Retries on. But, admittedly, it's cool to see the slow rise in email subscriber count.

For those newest subscribers, I recommend checking out the **Zero Retries About page** which describes the origin story of Zero Retries and some of the eclectic terminology I used here in Zero Retries.

Paid Subscribers Update

My thanks to **Prefers to Remain Anonymous 14** for *renewing* as a **Founding Member Annual Subscriber** to Zero Retries this past week!

Founding members are listed in every issue of Zero Retries!

My thanks to **Prefers to Remain Anonymous 15** for *renewing* as an **Annual Paid Subscriber** to Zero Retries this past week!

Financial support from Zero Retries readers is a significant vote of support for the continued publication of Zero Retries.

Pacificon 2024!

Pacificon 2024 in San Ramon, California, USA on 2024-10-18 thru 20 is *this weekend!* Tina KD7WSF and I are attending Pacificon 2024 (which makes it "major" to us).

My presentation at Pacificon 2024 - **Tracking Technological Innovation in Amateur Radio** will be on Saturday 2024-10-19 from 16:00 - 16:50 in Contra Costa Salon 2. Otherwise I'll be attending the several other Zero Retries Interesting presentations (which consume every Forum slot on Saturday - I'll be busy taking notes), and cruising the vendor area to talk to the Zero Retries Interesting vendors such as ARDC, AREDN, Bay Area Mesh, Connect Systems (the CS7000 M17 portable radio), Digital Library of Amateur Radio & Communications (DLARC), Digital Amateur Television, Halibut Electronics, and MMDVM.

See the **Zero Retries Guide to Zero Retries Interesting Events** for additional events.

Have a great weekend, all of you co-conspirators in Zero Retries Interesting Amateur Radio activities, especially all you fellow attendees of Pacificon this weekend! I look forward to talking to a lot of folks and meeting some folks who I've only known virtually.

Steve N8GNJ

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A Difference of Perspective

By Steve Stroh N8GNJ

Several Zero Retries readers have pushed back on my interpretation of ARRL CEO David Minster NA2AA's "Second Century" column in the 2024-08 issue of QST, "The Ecosystem of Becoming a Ham" in ***Zero Retries 0173*** *- ARRL's Dismissive Arrogance re: Technician Class Amateur Radio Operators.*

As a current ARRL member, I felt I have standing to present my interpretation of that editorial. Others reading the same editorial didn't come away with the same perspective. ***Fair enough!***

I'm not saying I'm right on my perspective and everyone else is wrong. I'm just presenting my perspective in public, and those who disagree should (obviously) feel equally empowered to present their perspective in public. And some have expressed their difference of opinion from mine in the comments section of ***Zero Retries 0173****, for which I'm grateful.*

As I've explained in Zero Retries over the past three plus years, there are a lot of new folks coming into Amateur Radio from non-traditional routes, and their expectations and goals in Amateur Radio are often very different from "traditional" Amateur Radio. Thus, perhaps I'm a bit too defensive on behalf of these new "only Technician" Amateur Radio licensees because of the all-too-pervasive attitude among many / most older Amateur Radio Operators that operating only on VHF / UHF "isn't *real* Amateur Radio". *Yes, really*, I have heard the VHF / UHF "isn't real Amateur Radio" over, and *over*, and ***over***, often said "kind of in jest… just kidding". Charitably, *even if stated in jest*, that attitude is parochial, condescending, dismissive, demeaning, and *generally just wrong*. Technician Amateur Radio Operators *are Amateur Radio Operators*. So, stop with the "real Amateur Radio" remarks… *please* - ***just stop doing that***.

As I said in the comments of **Zero Retries 0173** (a new record - ***35+***!), there was additional context that went into my interpretation of NA2AA's intent in that editorial, most of which weren't "hard fact" and thus I didn't feel that I should mention those "fuzzy" contexts.

But one "fuzzy context" that, in hindsight, I should have mentioned is my impression that ARRL's / NA2AA's perspective of what constitutes an active new Amateur Radio licensee, it seems to me, *is contextual to participation in ARRL activities*. If a new licensee doesn't get involved with ARRL… from the ARRL's perspective, they're "inactive". But I'll posit that a lot of those new licensees that ARRL considers "inactive" simply have a different perspective for getting their Amateur Radio license, and engage in activities other than what ARRL posits as "active".

To try to keep this discussion focused on the Zero Retries perspective, let me offer one example. I've talked to a number of new Amateur Radio licensees that obtained their Amateur Radio license *solely to be able to work with, use, experiment, and help build Amateur Radio microwave networks*[1]. Other than involvement with microwave networking, they have little interest in other aspects of Amateur Radio; *not* HF, *not* talking on repeaters, *not* attending Amateur Radio club meetings, not browsing through QST magazine and looking at the glossy advertisements of HF radios costing thousands of dollars… and *especially not becoming members of ARRL*. Thus, it seems to me that such new licensees would appear, from the ARRL's perspective, to be "inactive". Yet, they're not - they're just interested in different aspects of Amateur Radio *beyond* what ARRL recognizes as "active". I suspect that the new licensees that Dan Romanchik KB6NU describes in his seminal article Back to the future: Are hackers the future of amateur radio? would similarly be categorized by ARRL as "inactive".

With that, I think I've said as much as I feel justified to say regarding ARRL and its future, and I'm returning Zero Retries back to the more technical, interesting, aspects of technological innovation in Amateur Radio.

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Getting it Incomplete Sometimes

By Steve Stroh N8GNJ

A long time Zero Retries reader suggested that I explain my enthusiasm in Zero Retries 0173 - Audio Recording in ka9q-web for ka9q-radio (and the new [to me] development of ka9q-web.

Similarly, I got some details wrong in a reference to emergency notification systems, which justifies a bit more explanation.

re: ka9q-web

I've been fawning over ka9q-radio so often in ZR that I thought it would be familiar to most long time readers by now. But point taken that I shouldn't assume, and the reader was correct that unless one knew about ka9q-radio, the little context I provided wouldn't necessarily make a connection to understand the significance of ka9q-web.

This video by Phil Karn KA9Q is a good primer about ka9q-radio:

As KA9Q explains, ka9q-radio runs as a background / command line app and takes I+Q data in for the entire bandwidth of a software defined receiver and then processes it on the host computer into discrete channels from within the bandwidth of the receiver. Some SDRXs can receive 10 MHz at a time. So, for example, with ka9q-radio, you can listen to or record all of the FM channels on 2m *simultaneously* (yes, really, not sequentially as with a scanner).

In a powerful enough computer, you could easily do 10m, 6m, 2m, 1.25m, and 70 cm (with a dedicated SDRX for each band) simultaneously.

But in ka9q-radio, there's not much of a user interface to use ka9q-radio "casually", but it's apparently a frequent request to develop a more friendly user interface to make the strong capabilities of ka9q-radio more usable. KA9Q disclaims every chance he gets that *he's* not the right person to design a Graphical User Interface (GUI) for ka9q-radio, and he's issued numerous requests for help for creating a GUI for ka9q-radio to make it more usable "for the rest of us".

Thus, ka9q-***web*** is ka9q-radio with a graphical user interface. Until I read about ka9q-web, I wasn't aware that a

GUI had been developed for ka9q-radio. Now, with ka9q-web you can graphically browse and view the activity on any channel (or channels).

re: EAS / IPAWS Conflation

The same long-time Zero Retries reader took me mildly (and justifiably) to task for my mischaracterization in **Zero Retries 0173** - Satellite to Phone Wireless Emergency Alerts of the relative functions of

Emergency Alert System (EAS)

versus

Integrated Public Alert & Warning System (IPAWS)

I said:

> While there is an existing, robust infrastructure for Emergency Alerts called Emergency Alert System that incorporates notifications via mobile telephone (when mobile phone service is available), broadcast television and radio, direct broadcast satellite, streaming television service, and the dedicated NOAA Weather Radio All Hazards (NWR) network of transmitters that can be received by compatible receiver units…

My first goof is best explained by my long time Zero Retries reader:

> It would have been better to use the official term for the overall system that incorporates EAS, Wireless Emergency Alerts (WEA), Non-Weather Emergency Messages (NWEM) over NOAA Weather Radio, the All-Hazards Information Feed and the National Public Warning System (NPWS).

Interestingly, when I web searched *National Public Warning System (NPWS)* I didn't get any hits, only references to IPAWS and EAS.

My second goof was that I conflated the specific capabilities of the two systems.

Mobile telephone notifications are part of IPAWS, but not EAS.

In my brief scan of info about IPAWS, I saw a few references to "future tech" but no specific references to satellite emergency alerting to mobile phones.

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ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

NinoTNC and JNOS - fixed, working '100 percent' now

Maiko Langelaar VE4KLM on the Ninotnc email list:

> I guess I should provide an update on this. Nino, Mark, and myself spent a lot of time to figure out a bug in the JNOS asy code, to the point where NinoTNC is now working '100 percent'. It only took a few of us over half a year to really notice this, and figure out

that something was not quite right - corrupt data on the kiss interface, and so on. Fixed.

https://www.langelaar.net/radio/ve4klm/jnos2/documents/development.txt

I'm running a NinoTNC A4 Board (with latest firmware) full time again, and very happy with the performance. Thanks for putting in the effort to fix it Nino.

Other TNCs of similar architecture will benefit from this fix as well (thanks Mark) ...

JNOS2 is one of the under-appreciated gems of Amateur Radio, and will certainly be included in an upcoming list (and eventually a book) of core Amateur Radio data communications capabilities. To me, JNOS is best described as a multi-protocol router (AX.25, Net/ROM, and TCP/IP) for Amateur Radio data communications, especially Packet Radio. The TCP/IP functionality includes both IPv4 and IPv6!

It's very cool that the VE4KLM and Nino Carrillo KK4HEJ (creator of the NinoTNC) worked together on this.

SDRplay nRSP-ST Networked Receiver

SDRplay Limited recently announced the imminent launch of the "**nRSP-ST**", an **All-in-one, Plug-and-play Networked SDR Receiver.** The "nRSP-ST" was demonstrated publicly for the first time at the UK National Hamfest in Newark on September 27th 2024

This exciting new product addresses the needs of radio enthusiasts who want a 'plug-and-play' solution for remote reception. As well as achieving this, we have addressed typical internet bandwidth limitations with the creation of a novel "IQ Lite" mode, which efficiently delivers channels of IQ data. We have also introduced the ability to control and store IQ recordings at the remote location. We think the nRSP-ST will be ideal for anyone wanting a wideband remote receiver without needing computer skills and hours of set-up time and ongoing maintenance at the remote location. We are very much looking forward to making the product available as soon as possible. We are aiming to launch the nRSP-ST in time for the holiday shopping season and aiming at a price of just under $500 USD before tax.

The nRSP-ST key features:

- A truly "plug and play" integrated, networked general coverage receiver:
    - Combines a receiver, a host computer and a whole lot more – all in one box!
    - Apply power and connect to the internet (Ethernet or Wi-Fi) and the nRSP-ST is automatically accessible from anywhere
- The 14-bit ADC full featured wideband SDR receiver covers all frequencies from 1kHz through VLF, LF, MW, HF, VHF, UHF and L-band to 2GHz, with no gaps
- Remotely monitor up to 10MHz of spectrum at a time from a choice of 3 antennas
- Multi-platform SDRconnect software supports local operation or remote access on Windows, MacOS or Linux platforms
- The nRSP-ST & SDRconnect are configurable for available network bandwidth:
    - In "Full IQ" mode, the nRSP-ST provides IQ data transfer of the visible spectrum bandwidth (e.g.for high-speed LAN or superfast internet connectivity)
    - In "IQ Lite" mode, the nRSP-ST provides IQ data of channels up to 192kHz wide (e.g. for digital decoding by the client)

    - In “Compact” mode the nRSP-ST provides compressed audio (ideal for slower internet connections)
    - Supports multiple client connections with a simultaneous mixture of connection modes
    - All modes support visualization of up to 10MHz spectrum bandwidth
- Two remote connection options:
    - Use a remote SDRconnect client or
    - Use the built-in web-server for remote access from any web browsing capable device, including Android/iOS tablets and phones
- The nRSP-ST offers the ability to record IQ and audio files to a NAS (network attached storage) device if available on the LAN.
- Flash upgradable for future feature enhancements

At a quick glance this seems to be yet another “web-based HF (?) receiver” such as the KiwiSDR 2, but there are several innovations in the nRST-SP that differentiate it. Three innovations that leap out to me are:

- Three different antenna inputs. I didn’t see that the differences between the three antenna inputs are stated, but presumably a remote user can select which antenna to use depending on frequency to be monitored. Or perhaps the appropriate antenna input is selected automatically depending on frequency.
- Built-in recording capability; I would have thought it would be more efficient to do the recording via directly attached storage such as USB flash drive or USB hard disk, but it’s an interesting capability to save data to a NAS, and save both audio and IQ data.
- Being able to use a number of different types of connection and display, including web browser display or SDRPlay’s SDRconnect app which runs on Windows, MacOS, or Linux.

I’ll be able to learn more directly about the nRST-SP directly as they will be exhibiting at Pacificon 2024 as part of the Ham Radio Outlet table.

3rd Party PoE HATs for Pi 5 Add NVMe, Fit Inside Case

Jeff Geerling KF0MYB:

> Today I published a video detailing my testing of three new Raspberry Pi HATs—these HATs all add on PoE+ power and an NVMe SSD slot, though the three go about it in different ways.
>
> You can watch the video for the full story (embedded below), but in this post I'll go through my brief thoughts on all three, and link to a few other options coming on the market as well.

Being able to exploit the *full* capabilities of the Raspberry Pi 5 seem to be a work in progress by Raspberry Pi Foundation, as KF0MYB explains with the innovation of third party vendors going beyond Raspberry Pi’s accessory products. I think that the RPi 5’s (and some of the earlier units) being able to be powered by Power over Ethernet (POE) means that they can be more easily remoted for certain Amateur Radio applications such as a Software Defined Receiver connected to a Raspberry Pi and put the unit near an antenna with a *short* run of coaxial cable instead of a long run of (lossy, especially at VHF and higher frequencies) coaxial cable. As much as there are other more capable embedded computers, including an increasing number of low cost, higher capability computers based on X86 processors (capable of running conventional Windows) that can be DC powered, in my opinion the Raspberry Pi product line offers the best overall capabilities for Amateur Radio, when the stable operating systems, long term availability, accessory ecosystem, and overall quality and support from Raspberry Pi are factored in.

Raspberry Pi SD Cards - *By* Raspberry Pi

> SD card quality is a critical factor in determining the overall user experience for a Raspberry Pi computer. Raspberry Pi's high-quality A2 microSD cards support higher bus speeds as well as the command queueing extension, which permits a degree of pipelining of random read operations; together these close some of the gap between SD card and NVMe SSD performance. Raspberry Pi SD Cards have been rigorously tested with Raspberry Pi computers to ensure optimal performance.
>
> Raspberry Pi SD Cards are available in 32GB, 64GB, and 128GB variants, either unprogrammed or pre-programmed with Raspberry Pi OS. They are also available with Raspberry Pi-branded microSD-to-SD adapters and jewel cases.

Speaking of accessory ecosystem and overall quality and support from Raspberry Pi…

This is a development I wouldn't have imagined - specialized (Micro) SD cards not just for Raspberry Pi computers, but specifically made by Raspberry Pi for Raspberry Pi computers! Raspberry Pi is one of those rare vendors with enough scale to be able to get something like this made specific to their requirements.

Using SD cards for the OS and data storage on a Raspberry Pi is one of the primary (and valid) critiques about the overall reliability of a Raspberry Pi in (semi critical) Amateur Radio applications, such as a repeater controller. While you can reduce the issues by using a higher quality SD card such as Sandisk (which I buy in bulk at Costco), it would seem like the use of Raspberry Pi's SD cards would result in better reliability on a Raspberry Pi computer because they were designed… or at least specified, and tested, for that particular application.

AnyTone AT-D878UVII Now Has Satellite Tracking

Lars Thunberg SM0TGU on the AMSAT-SM blog:

> As the first (what I know of) commercial handheld radio the AnyTone AT-D878UVII software release V3.04 has included amateur radio satellite tracking. From the webpage we got the following information:
>
> - **Predict Satellite Transits**: The firmware provides a **list of upcoming satellite passes**, allowing you to plan ahead for satellite communications.
> - **Frequency and Transit Time Display**: Select a satellite from the list to view its **communication frequency** and **exact transit time**.
> - **Direct Communication**: Once a satellite is selected, press the **PTT (Push-to-Talk) button** to transmit directly to the satellite. This is a huge leap for satellite communication enthusiasts, making it easy to operate via satellite with minimal setup.
>
> Read more at: https://anytone.org/wp/2024/09/19/anytone-at-d878-now-has-automatic-satellite-tracking/

Now *that*… is pretty cool!

Leave a comment

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Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*

- ***Annual Founding Members*** **who generously support Zero Retries financially:**
  Founding Member 0000 - Steven Davidson K3FZT (Renewed 2024)

  Founding Member 0001 - Randy Smith WU2S (Renewed 2024)
  Founding Member 0002 - Chris Osburn KD7DVD (Renewed 2024)
  Founding Member 0003 - Don Rotolo N2IRZ (Renewed 2024)
  Founding Member 0004 - William Arcand W1WRA (Renewed 2024)
  Founding Member 0006 - Todd Willey KQ4FID (Renewed 2024)
  Founding Member 0007 - Merik Karman VK1DF / VK2MKZ (Renewed 2024 *with two Founding Member subscriptions!*)
  Founding Member 0008 - Prefers to Remain Anonymous 14 (Renewed 2024)
  Founding Member 0009 - Prefers to Remain Anonymous 19
  Founding Member 0011 - Rick Prelinger W6XBE (New 2024)
  Founding Member 0012 - Ryan Tolboom N2BP (New 2024)

- Numerous Annual and Monthly subscribers who also generously support Zero Retries financially!

Want to Support Zero Retries?

- The *most* effective way to support Zero Retries is to simply mention Zero Retries to your co-conspirators that are also interested in knowing more about technological innovation that is occurring in Amateur Radio and encourage them to become a fellow subscriber.

- One particularly effective method of promoting Zero Retries is to add a mention of Zero Retries to your QRZ page (or other web presence) and include a link:

  https://www.zeroretries.org

- If you'd like to financially support Zero Retries, becoming a paid subscriber is *greatly* appreciated and helps offset expenses incurred in publishing Zero Retries. Paid subscriptions for Zero Retries are *entirely optional*, as explained in this special issue of ZR:
  Zero Retries Administrivia - Activating Payment Options.

These blogs and newsletters regularly feature Zero Retries Interesting content:

- Dan Romanchik KB6NU mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.

- Jeff Davis KE9V also mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories that often feature "Zero Retires Interesting" topics.
- Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC. It's a *must-read-now* for me!
- RTL-SDR Blog - *Excellent* coverage of Software Defined Radio units.
- TAPR Packet Status Register has been published continuously since 1982.
- Hot Iron - The Journal of the Constructor's Club is a delightful quarterly newsletter.
- Other Substack Amateur Radio newsletters recommended by Zero Retries.

These YouTube channels regularly feature Zero Retries Interesting content:

- HB9BLA Wireless by Andreas Spiess HB9BLA
- KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)
- Modern Ham by Billy Penley KN4MKB
- Tech Minds by Matthew Miller M0DQW

These podcasts regularly feature Zero Retries Interesting content:

- Store and Forward - a podcast about the past and future of amateur radio, by Kay Savetz K6KJN (curator of the Digital Library of Amateur Radio and Communications) and Steve Stroh N8GNJ (Editor of Zero Retries).
- Ham Radio Workbench by George Zafiropoulos KJ6VU (and friends)
- Foundations of Amateur Radio by Onno Benschop VK6FLAB

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click below to join ***2200+*** other subscribers:

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Offering **feedback or comments** for Zero Retries is equally easy — just click:

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If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Social Media:

Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Zero Retries (N8GNJ) is also on Bluesky — @n8gnj — just click:

Zero Retries / N8GNJ on Bluesky

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- **SuperPacket blog** — *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- **N8GNJ blog** — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs in Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA, and linked to the Internet via **Starlink *Satellite* Internet Access**.

2024-10-xx

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Footnotes for this Issue

1

One such person explained their decision to get their Amateur Radio (Technician) license to experiment with and participate in microwave networks pretty succinctly: "Now that Amateur Radio can do reasonable speeds (1 Mbps+), run a real network protocol (TCP/IP vs AX.25), run real applications like VOIP, video, fast file transfers, etc.)… with those capabilities, Amateur Radio is interesting.

2

A lot of people ask what acronym **JNOS** represents, and as one of the folks who used JNOS in the very earliest days of its creation, I can state that JNOS is an acronym for "WG7**J** **N**etwork **O**perating **S**ystem. WG7J forked the Network Operating System code originally written by Phil Karn KA9Q and added compatibility with BBS forwarding and Net/ROM networking (which wasn't present in the KA9Q version of NOS).